

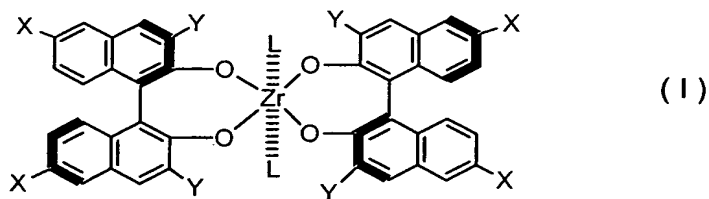
CLAIM

1. A practical chiral zirconium catalyst that is stable in air and storable for a long period of time, comprising a chiral zirconium catalyst and zeolite, wherein the chiral zirconium catalyst is fixed onto the zeolite.

2. The practical chiral zirconium catalyst of claim 1, wherein the chiral zirconium catalyst comprises, as its component, zirconium and an optically active binaphthol compound.

3. The practical chiral zirconium catalyst of claim 1 or 2, wherein the chiral zirconium catalyst comprises, as its component, a coordination compound.

4. The practical chiral zirconium catalyst of claim 3, wherein the chiral zirconium catalyst is represented by the following formula (I):



wherein, X and Y are the same as or different from each other and represent a hydrogen atom, a halogen atom or a fluorinated hydrocarbon group, at least one of them being a halogen atom or a fluorinated hydrocarbon group; and L represents a ligand.

5. The practical chiral zirconium catalyst of claim 4, wherein the fluorinated hydrocarbon group is a perfluoroalkyl group.

6. The practical chiral zirconium catalyst of claim 4, wherein the fluorinated hydrocarbon group is a perfluoroalkyl group of 1 to 6 carbon atoms.

7. The practical chiral zirconium catalyst of any one of claims 1 to 6, wherein the zeolite is selected from the group consisting of Molecular Sieve 3A, Molecular Sieve 4A and Molecular Sieve 5A.

8. The practical chiral zirconium catalyst of any one of claims 1 to 7, wherein the chiral zirconium catalyst is fixed on zeolite by electrostatic interaction.

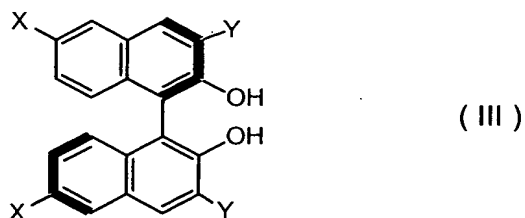
9. A practical chiral zirconium catalyst obtained by the steps of:

drying Molecular Sieve by heating under reduced pressure in an inert atmosphere;

mixing the Molecular Sieve with a zirconium alkoxide represented by the following formula (II):



wherein R represents a hydrocarbon group that may contain a substituent; and an (R)-BINOL represented by the following formula (III):



wherein X and Y may be the same as or different from each other, and represents a hydrogen atom, a halogen atom or a fluorinated hydrocarbon group, at least one of them being a halogen atom or a fluorinated hydrocarbon group.

10. The practical chiral zirconium catalyst of claim 9 obtained by further mixing a coordination compound with the zirconium alkoxide and the (R)-BINOL.

11. The practical chiral zirconium catalyst of claim 10,

wherein the coordination compound is N-methylimidazole.

12. A method for asymmetric Mannich reaction, comprising:
reacting an imine and a silicon enolate in the presence of the practical
chiral zirconium catalyst of any one of claims 1 to 9.

5 13. A method for Aza Diels-Alder reaction, comprising the use
of the practical chiral zirconium catalyst of any one of claims 1 to 9.

14. A method for Strecker reaction, comprising the use of the
practical chiral zirconium catalyst of any one of claims 1 to 9.